ANSWERS TO CONTINUING MEDICAL EDUCATION QUESTIONS

Clinical microbiological case: a patient with vascular risk factors, chest pain and fever

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Please refer to the article on pages 55–56 of this issue to view the questions to which these answers refer.

1. An initial diagnosis of respiratory sepsis (pneumonia and/or empyma) was made, but the serohemorrhagic nature of the pleural effusion led to the clinical suspicion of active hemorrhage into the pleural cavity. When the CT scan of the thorax was performed, it showed a sacular aneurysm of the descending aorta with perianeurysmal hematoma and a massive hemorrhagic effusion with areas of different density in the pleural cavity. A few minutes later, the patient died in cardiovascular collapse, before surgical intervention was possible. Autopsy was not authorized. S*almonella enteritidis* serotype D was isolated from blood and in pleural fluid cultures.

The patient thus had a sacular mycotic aneurysm of the descending aorta which ruptured towards the pleural cavity, caused by *S. enteritidis*. Mycotic aneurysms (MAs) caused by *Salmonella* species have often been described, because of the propensity of this microorganism to infect vascular sites. *Salmonella. enteritidis* serotypes are the most frequently reported in Europe, e.g. in Spain [1], whereas *S. cholerasuis* and *S. typhimurium* are predominant in the USA [2]. Merkin et al. found only 14 cases of thoracic aortic aneurysms produced by *Salmonella* species in their study of cases recorded from 1950 to 1993, and *S. enteritidis* serotype D was the most frequent [3]. Any *Salmonella* serotype can produce bacteremia, and Cohen et al. reported that 25% of people over 50 years with salmonella bacteremia had endothelial infection, demonstrating the important role played by this microorganism in the pathogenesis of intravascular infections [4]. Nevertheless, reported cases of mycotic aneurysms caused by *Salmonella* are scarce, and the intrathoracic location in this case is exceptional.

2. A high index of suspicion is essential if the diagnosis of mycotic aneurysm is to be made, because initial symptoms are frequently non-specific and early diagnosis is important for prompt and successful treatment [5]. The diagnosis can be established when there are appropriate clinical findings, such as high fever and chills, or symptoms related to the location of the aneurysm (back, shoulder or abdominal pain), along with recurrent bacteremia and the demonstration of aneurysmal dilatation of the aortic wall on a CT scan of the thorax. This last finding should be confirmed by aortography. Finally, the presence of cardiovascular risk factors or established arteriosclerotic disease also supports the diagnosis. Probably, the patient had repeated ruptures, coinciding with bacteremia, that were contained by perianeurysmal inflammatory activity. Such presumed intermittent bleeding areas explain the finding of areas of different density in the pleural cavity. Cases of relapsing rupture, contained by the blood itself or by other structures such as the parietal pleura, mediastinum or retroperitoneum, have also been described [6,7].

3. The optimal treatment is surgical debridement of the aneurysm and the restoration of arterial flow by prosthetic reconstruction in situ or by extra-anatomic bypass [8]. Prolonged administration of antibiotics is required, usually for more than 6 weeks, and several authors recommend lifelong antimicrobial therapy because of high relapse rates. However, despite early surgical intervention, development of new surgical techniques, and effective bactericidal antibiotics such as ampicillin, ciprofloxacin, or third-generation cephalosporins, the mortality rate in these patients remains as high as 75% [3,8–10]. Finally, although salmonella gastroenteritis is usually a self-limiting disease, and bacteremia develops in less than 5% of all patients, certain individuals are at increased risk of invasive infection, and may benefit from preventive antimicrobial therapy. Antimicrobial therapy should be considered for neonates, persons older than 50 years, and patients with immunosuppression, cardiac valvular or mural abnormalities, or prosthetic vascular grafts.

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